40098

Patent Application of

AXEL SCHULTE

MARK-UP VERSION

(1)

~~PCT report, new version of application~~
~~MODIFIED SHEET~~

for

all caps

Field of the Invention

Floor Carpet Installation System

The present invention relates to a floor carpet installation system with a carpet forming the usable surface with its nap side, a loopless material glued together with the floor surface, as well as an anchoring means which has protruding interlocking elements on both sides, ~~which on the one hand~~ interlock with the backside of the carpet formed of a loopless material opposite the nap side, ~~on the other hand~~ interlock with the loopless material on the floor surface.

The interlocking elements on one side on its opposite side

Background of the Invention

A floor carpet installation system ~~of this type~~ is ~~already known from~~ FR 2 282 999 A. In the ~~case of this known~~ conventional system, strips are provided and aligned on the carpet edges as anchoring means, ~~which on~~ both sides of the strips have protruding interlocking elements in the form of bristles inclined relative to the carpet plane, ~~whereby~~ these bristles are inclined on one side and on the other side in turn in opposite directions from one another. This opposing inclination of the bristles, with the interlocking with the loopless backside of the carpet and with the loopless material of the carpet fastened to the floor, is intended

disclosed in

is

Floor Carpet Installation System

The invention relates to a floor carpet installation system comprising a carpet forming the usable surface with its front side and an anchoring means that can be fixed to the floor, the anchoring means having upwardly protuberant interlocking elements which come into interlocking engagement with the backside of the carpet opposite the nap side.

A floor carpet installation system of this type is already known from EP 0 321 978 B1. With the known system the backside of the carpet incorporates loop elements protruding out over the make-up of the material, with which come into engagement hooks found on the anchoring means which can be fastened to the floor.

This type of anchoring of the carpet to the floor incorporates inadequacies. As has been shown, the cooperation of the hooks and the free loops found on the carpet backside prevent a lifting of the carpet, but this type of anchoring still does not provide sufficiently secure connection for the prevention of sliding along the carpet plane. Thus during use it can lead to formation of buckling and displacements, and especially with higher stresses, for example with sliding of heavy pieces of furniture, there exists the danger of great damage.

The object of the invention is to disclose a floor carpet installation system which guarantees a comparatively improved anchoring between carpet and floor.

With a floor carpet installation system of the aforementioned type this object according to the invention is attained in that the backside of the carpet turned toward the anchoring means is formed by a loopless material and that a micro-adhesive closing with anchoring elements in the

form of fingers with thicknesses at their ends is provided as anchoring means, wherein the thicknesses at the ends of the fingers interlock with the loopless backside of the carpet.

The cooperation of a micro-adhesive closing having anchoring elements in the form of fingers with thicknesses at their ends with a loopless carpet backside leads to an especially rigid connection when considered in terms of the relative movements along the carpet plane, but also, with overcoming of the holding force, facilitates a lifting of the carpet without tearing of the anchoring means or of their interlocking elements, which under certain conditions represents an additional advantage, for example because following the execution of an intended lifting, a re-anchoring is possible without further procedures. In view of the fact that longitudinal sliding is definitely prevented, no danger exists of bulges or displacements occurring, even with stronger stresses.

A micro-adhesive closing which is particularly suitable for the system according to the invention is known from DE 196 46 318 A1. According to the make-up of the material of the carpet to be installed, in other words according to the structure of the backside, a micro-adhesive closing with a thickness of the carrier of the interlocking elements of 0.1 to 0.5 mm and with 20 to 600 interlocking elements per cm^2 can be used.

The thicknesses of the fingers of the interlocking elements can have the shape of mushroom heads or plate-shaped heads, whereby the heads are preferably provided on their tops with concave depressions. A method for particularly simple manufacture of micro-adhesive closings with such interlocking elements is suggested in German patent application 198 28 856.5.

With use of interlocking elements having depressions on the tops of their heads, the depressions on the heads can be provided with an adhesive allowing for an additional connection with the

backside of the carpet, for example by scraping the adhesive on the heads.

Textile materials in the form of felts or fleeces, or else loose breaker fabric or smooth stitches, as well as non-woven textiles, can be provided as backside of the carpet.

Hereinafter the invention is to be described in greater detail relative to the drawing. Therein can be found :

Fig. 1 a diagrammatically simplified and broken open cross section of a floor carpet with open nap and loopless backside;

Fig. 2 a perspective, greatly enlarged view of a microplast-adhesive closing part, whereby one individual interlocking element is represented still larger and in cross section;

Fig. 3 a view corresponding to that of Fig. 2, whereby depressions on the tops of the heads of the interlocking elements are provided with adhesive, and

Fig. 4 a broken open plan view in almost natural size of the loopless backside of the carpet of Fig. 1.

Fig. 1 shows in enlarged, diagrammatic simplified representation a cross section through a floor carpet with nap elements 1 of the traditional type, which extend upward from a connection layer 3 and which form the nap side of the carpet, serving as the usable surface. The backside 5 opposite the nap side is formed of a loopless material. For this purpose materials can be considered which lend the carpet structure a certain rigidity, directional alignment stability and tear resistance. In this case felt or fleece can be used, which obtain their mechanical composition by the tufting method and are glued with the connection layer 3 of the carpet. Loose breaker fabric or smooth right/left stitches and other so-called non-woven materials are also suitable for this purpose.

~~is to~~ prevent sliding along the carpet plane. However, ~~it has been shown that~~ this type of anchoring does not guarantee a sufficiently secure connection. Thus, it can lead to the formation of buckling and displacement during use, ~~and~~ especially under greater stresses, for example by sliding of heavy pieces of furniture, the danger of great damage can exist.

Summary of the Invention

~~The~~ object of the present invention ~~is to disclose~~ are to provide a floor carpet installation system which is characterized by comparably improved properties of use.

With the floor carpet installation system, ~~of the aforementioned type this~~ these objects are attained by the present invention in that a micro-adhesive closing element is provided as the anchoring means, ~~of which~~ The anchoring means has ~~the~~ interlocking elements ~~are~~ configured in the form of fingers with thicknesses at their ends, ~~and that~~ the interlocking elements include different shapes and/or dimensions and/or different reciprocal distances from one another on both sides of the adhesive closing element.

The anchoring provided according to the present invention by ~~means of~~ a double-sided micro-adhesive ~~closing, of which the adhesive~~ closing element having interlocking elements arranged on both sides in the form of fingers with thicknesses at their ends, ~~which~~ interlocks on each side in turn with a loopless material and leads to several advantages. On the one hand, this type of interlocking yields a particularly secure connection against ~~as compared with~~ the relative movements along the carpet plane. On the other hand, since in ~~view of~~ this arrangement the adhesive closing element is not adhered directly with the floor surface, but rather is interlocked with a likewise loopless material fastened to the floor surface, ~~which~~ the present invention avoids the danger that shrinkage or displacements occurring following the hardening or aging process of the finish of the floor could lead to a detachment of the anchoring.

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~~because~~ the loopless material ~~found~~ on the floor surface forms a compensation layer having a certain flexibility to compensate for the shrinkage or displacements. In addition, this layer fixed to the floor surface also causes footstep-sound-absorption.

Another advantage results from the ~~resides in that by~~ selection of the dimensions and the shape and/or selection of the number of interlocking elements per surface unit, the degree of interlocking effect on both sides of the adhesive closing element can be selected in a suitable manner by such selection. Thus, for example, the adhesive effect on the bottom of the adhesive closing element turned toward the floor finish can be selected to be more powerful than the adhesive effect against the loopless material on the backside of the carpet. With lifting of the carpet, which with interlocking with loopless material of the carpet backside is possible by overcoming the adhesive force, the adhesive closing element in this case remains interlocked with the floor-side loopless material, so that following lifting of the carpet a renewed installation is possible without further processes.

A micro-adhesive closing element ~~which is~~ configured similar to that element ~~which~~ is ~~known from~~ disclosed in DE 196 46 318 A1 and is suitable for the installation system according to the present invention. However, ~~but~~ nonetheless differs that micro-adhesive closing element ~~therefrom in that not only on~~ the front side ~~but also on~~ and the backside of the carrier from the element of the present invention in that ~~the latter~~ are constructed with corresponding interlocking elements of the present invention only.

According to the make-up of the carpet to be installed, in other words according to the structure of the backside, a micro-adhesive closing with a thickness of the carrier of the interlocking elements of 0.1 to 0.5 mm and with 20 to 600 interlocking elements per cm^2 can be used on each side.

The thicknesses of the fingers of the interlocking elements can have the shape of mushroom

heads or plate-shaped heads, ~~whereby~~ the heads are preferably provided with concave depressions on the top sides. One method for the especially simple manufacture of micro-adhesive closing elements with such interlocking elements in a one-sided arrangement is suggested in the German patent application 198 28 856.5.

With use of interlocking elements ~~which~~ have ing depressions on the tops of the heads, the depressions of the heads can be provided with an adhesive providing ~~for~~ an additional connection with the backside of the carpet and/or the floor-side material. The adhesive can be applied, for example, by scraping on.

Textile materials in the form of felts or fleeces, or else loose ~~breaker fabric~~ leno weave or ~~smooth stitches~~ flat knit ~~knit~~ as well as non-woven textiles can be provided as backside of the carpet and as the loopless material glued with the floor.

~~Hereinafter the invention is to be explained in greater detail relative to the drawing. In the drawing are found :~~

~~Fig. 1 a diagrammatic simplified and broken open cross section of the components of the floor carpet installation system according to the invention;~~

Fig. 2 a perspective, greatly enlarged view of a double-sided micro-adhesive closing element of the floor carpet system of Fig. 1 with ~~whereby~~ one individual interlocking element ~~is represented as still larger and~~ illustrated in an enlarged side elevational view in ~~cross~~ section; and

Fig. 3 a ~~broken open~~ partial plan view ~~indicated~~ in ~~almost natural dimensions~~ substantial actual scale of a loopless backside of the carpet of Fig. 1.

Detailed Description of the Invention

Fig. 1 ~~shows in~~ is an enlarged, diagrammatic simplified representation ~~of~~ in cross section of a floor carpet with nap elements 1 of the traditional type, ~~which~~ Nap elements 1 extend upward from a connection layer 3 and ~~which~~ form the nap side of the carpet serving as ~~the~~ its usable surface. The backside 5 opposite the nap side is formed by a loopless material. For this purpose, materials could be ~~considered which~~ used lend the carpet structure a certain rigidity, directional alignment stability and tear resistance. Therefore, felt or fleece could be used, ~~which~~ obtain their mechanical composition by the tufting method and are adhered ~~with~~ to connection layer 3 of the carpet. Also, loose ~~breaker fabric~~ woven weave or ~~smooth right/left stitches~~ flat knit and other so-called non-woven materials are ~~considered~~ suitable for ~~this purpose~~ backside 5.

Fig. 2 shows a section of a strip of a micro-adhesive closing element 7 similar to ~~such a strip as~~ that disclosed in DE 196 46 318 A1. The thermoplastic strip (for example, polyolefines or blends of polyamides) is formed in the gap between a top and a bottom shaping tool 5 and forms a foil-like carrier 9 with fingers 11 protruding from its top and bottom ~~in turn~~ respectively. Fingers 11 protruding from the top of carrier 9, ~~of which~~ have the thickened ends form mushroom-shaped or plate-shaped heads 13 and come into interlocking engagement with the loopless material of backside 5 of carpet 5, ~~and~~ actually ~~in~~ direct engagement ~~in~~ with the ~~structure, as is shown in cross section in Fig. 3 in the plan view.~~ carpet backside. ~~According to the mechanical construction and quality of this structure of the back-~~

...

Fig. 2 shows a section of a strip of a microplast-adhesive closing 7 as it is disclosed in DE 196 46 318 A1. The thermoplastic (for example polyolefines or blends of polyamides come into consideration) strip formed in the gap between a pressure tool and a shaping tool forms a foil-like carrier 9 with fingers 11 protruding from its top. According to the mechanical construction and quality of the structure of backside 5 of the relevant carpet, the arrangement of fingers 11 has a packing density of approximately 20 to 600 fingers 11 per cm^2, with a thickness of carrier 9 of approximately 0.1 to 0.5 mm. Other packing densities and/or thicknesses of carrier 9 can of course be considered according to the special circumstances. Such fingers are also on the bottom of carrier 9.

As can be recognized particularly from the sectional representation shown greatly enlarged in Fig. 2, the thickened heads 13 of fingers 11 are formed into mushroom- or plate-shapes with concave arcuate tops, so that within the edge of each head 13 is found a depression 15.

With the example shown in Fig. 2 the depression 15 of head 13 is filled with an adhesive 17. This can be applied by spreading on or scraping on, in order to produce an additional connection following the interlocking engagement with backside 5 of the relevant carpet. Adhesives on acrylate base can be considered as adhesive material, for example 2-ethyl hexyl acrylate or butyl acrylate, preferably in different selected mixture ratios, in order to vary the plasticizing, plasticity and adhesive power as desired and as required.

With wall-to-wall installation of carpets, adhesive closings 7 can be provided in the form of long strips or bands. With installation of the carpet in tile-like or flagstone-like form, shorter, strip sections adapted in a suitable manner to the individual tile parts can be provided.

What is claimed is:

Other objects, advantages and salient features o the present invention will become apparent from th following detailed description, which, taken in con junction with the annexed drawings, discloses preferre embodiments of the present invention.

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Brief Description Of The Drawings

Referring to the drawings which form a part of thi disclosure:

Figure 1 is a diagrammatically simplified, partial side elevational view in section of ~~an apparatus for~~ the components of the floor carpet installation system according to ~~a first embodiment of~~ the present inven tion;

~~Figure 2 is a top plan view in section of th~~ apparatus taken along line A-A of Figure 1;

Figure 3 is a side elevational view in section o an apparatus according to a second embodiment of the present inven tion; and

Figure 4 is a side elevational view in section o an apparatus for according to a third embodiment of the present inven tion.

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While ~~various~~ one embodiments have been chosen to illustrate the invention, it will be understood by those skilled in the art that various changes and modifica tions can be made therein without departing from the scope of the invention as defined in the appended claims.

Patent Claims

1. Floor carpet installation system with a carpet having its nap side (1) forming the usable surface and an anchoring means (7) which can be fastened to the floor, which anchoring means has upwardly protruding interlocking elements (9), which come into interlocking engagement with the backside (5) of the carpet opposite the nap side (1), characterized in that the backside (5) of the carpet turned toward the anchoring means is formed by a loopless material and that a micro-adhesive closing (7) with interlocking elements in the form of fingers (11) with thicknesses (13) at their ends is provided as anchoring means, which interlock with the loopless backside (5) of the carpet.
2. Floor carpet installation system as in Claim 1, characterized in that the thicknesses of the fingers (11) of the interlocking elements have the shape of mushroom heads or plate-like heads (13).
3. Floor carpet installation system as in Claim 2, characterized in that the thicknesses forming heads (13) are provided with concave depressions (15) on their tops.
4. Floor carpet installation system as in Claim 3, characterized in that the depressions (15) of the heads (13) are provided with an adhesive (17) causing an additional connection with the backside of the carpet.
5. Floor carpet installation system as in Claim 4, characterized in that an adhesive (17) on acrylate base is provided.
6. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that felt or fleece are provided as the loopless textile material of the backside (5) of the carpet.
7. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that loose breaker fabric or smooth stitches are provided as loopless textile material of the backside (5) of the carpet.

8. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that non-woven textiles such as synthetic materials, needle felt or needle nap are provided as loopless textile material of the backside (5) of the carpet.

9. Floor carpet installation system as in one of the Claims 1 to 8, characterized in that the backside of the micro-adhesive closing (7) opposite the interlocking means (11) can be connected with the floor by use of adhesive.

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Patent Claims

1. Floor carpet installation system with a carpet forming the usable surface with its nap side (1), a loopless material (21) glued with the floor surface (25), as well as an anchoring means (7), which includes on both sides protruding interlocking elements (11), which on the one hand interlock with the backside (5) of the carpet formed of a loopless material, opposite the nap side (1), and on the other hand interlock with the loopless material (21) on the floor surface (25), characterized in that a micro-adhesive closing element (7) is provided as anchoring means, of which the interlocking elements are configured in the form of fingers (11) with thicknesses (13) at their ends, and that the interlocking elements (11, 13) on both sides of the adhesive closing element (7) include different shapes and/or dimensions and/or different reciprocal distances from one another.

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2. Floor carpet installation system as in Claim 1, characterized in that the thicknesses of the fingers (11) of the interlocking elements have the shape of mushroom heads or plate-shaped heads (13).

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3. Floor carpet installation system as in Claim 2, characterized in that the heads (13) forming the thicknesses are provided on their tops with concave depressions (15).

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4. Floor carpet installation system as in Claim 3, characterized in that the depressions (15) of the heads (13) on at least one side of the adhesive closing element (7) are provided with an adhesive (17) providing for an additional connection with the backside (5) of the carpet and/or the material (21) on the floor surface (25).

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5. Floor carpet installation system as in Claim 4, characterized in that an adhesive (17) is provided on acrylate base.

6. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that felt or fleece are provided as loopless material (5, 21).

7. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that loose break fabric or smooth stitches are provided as loopless material (5, 21).

8. Floor carpet installation system as in one of the Claims 1 to 5, characterized in that non-woven textiles such as synthetic materials, needle felt or needle nap are provided as loopless material (5, 21).

9. Floor carpet installation system as in one of the Claims 6 to 8, characterized in that at least the loopless material (21) provided on the floor surface (25) has footstep-sound-absorbing properties.